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Chapter 9

Massive Open Online Courses (MOOC) and Its Possibilities as Instrument of Formal, Nonformal, Informal and Lifelong Learning

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Additional information is available at the end of the chapter

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Abstract

In this chapter, we present the definition, development, and providers of massive open online courses (MOOC). We also explain the advantages and disadvantages of MOOC. We also present the structure of participants of MOOC, and also the motivation of participants is analyzed. Some basic statistics of realization and success of participants are also displayed. In one part of this chapter, the authors present case study of MOOC implementation in formal education in Belgrade Polytechnic (BP) College. For informal learning, a MOOC for welding is presented. This MOOC is planned to be organized on faculty of mechanical engineering at Belgrade University. During MOOC, participants also expanded their knowledge base and in that way they created possibilities for rerun of MOOC on a higher level. In that way, a participant can attend the same course after a couple of years and then will upgrade his knowledge. This attribute makes MOOC an instrument for lifelong learning.

Keywords: MOOC, education, formal education, nonformal education, learning

1. Introduction

In formal education, such as the development of technology and communication systems, there was no significant transformation in knowledge transfer. Development of technology in information and communication technologies (ICT) did not change the way of knowledge transfer. Lecturers still transfer their knowledge by tutoring students face to face. Significant improvements have been made in the implementation of ICT, but more in a way as educa-

tional tools. Even all E-learning systems are based on screen adaptation of lectures and web or mobile communication.

Such educational access enables significant improvement in speed and quantity of data exchange, but in educational approach nothing is changed especially in formal learning.

In the last 10 years, the environment (mankind) has become aware that it must be changed over, including the education system itself. Also other forms of education, formal and informal, become more important. There is also the need for lifelong learning (lifelong education).

2. Formal, nonformal and informal education

Education is a process of transferring knowledge from one generation to the next. Earlier, the knowledge passed down from generation to generation very often on an individual basis. Development of technology and society indicated the need for specialized knowledge, but it was no longer possible to organize as individual education in the more developed areas, such as school. First elementary schools were developed than secondary and finally higher education.

Education, in which the aim is to acquire knowledge and to certify for a system of schools that usually control the state apparatus, is called formal education.

Nonformal education also includes a conscious vision of education, but outside the formal education system. So it is adapted to the needs of the target group. Participants who attend this education are from different age groups, with different prior knowledge and different experiences. Learners are expected to be active participants in the education process.

Informal education is in fact the broadest form of education that people gain essentially based on the information in their environment. This process of education includes all the knowledge, skills, and logic that a single entity may acquire through daily communication with the environment, either with other people, media presentation, everyday experience in dealing, etc. This form of education is a good example of lifelong learning.

3. Systems of education

Education systems may be different over the conventional school system, through various specialized courses in different training system. All systems are designed to convey some knowledge from one person to another or among various persons.

Development of information and communication technologies significantly influences on the development of various models of knowledge transfer but is still dominated by the classical method of teaching. ICT has primarily enabled virtualization and adaptation of classes and found improved understanding of the participants through its application. Also, web development and communication systems have accelerated, modernized, and facilitated the transfer of information, but also drastically increased availability of information in the development of educational models [10].

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One of the models of knowledge transfer and improving the education, primarily in nonformal systems of education, is massive open online courses (MOOC) phenomenon.

The occurrence of MOOC (massive open online courses—massive courses on the net with an open access) may indicate the future direction of the education system.

Many thought that MOOC courses will overcome all other learning systems. But is it so?

4. MOOC

Massive open online courses (MOOC) belong to the section of distance learning (DL). They evolved from the classic DL environment under the influence of the movement for free using learning resources (open educational resources movement – OER). Moreover, MOOC in an organization is the basic element of knowledge transfer and communication, and it is transferred by using a DL-platform like Moodle, Blackboard, Iversity, Edmodo, etc [4, 13].

MOOC's basic idea is that an online course does not have a limited number of participants and has full free and unlimited participation via the web. MOOC means that in addition to the completely free use of all the traditional forms of teaching the course, other methods are also used, such as interactive blogs, sites, and all forms of communication via the web and mobile telephony. The purpose of this platform is in fact to work with the masses, and the transfer and dissemination of knowledge to large groups of people who want to gain knowledge in a certain field. It also ensures that all informal knowledge dealing with a particular topic is provided along with the development of formal knowledge. This approach is based on the fact that some kind of "peer to peer" network communication is held, except where the moderators' (trainers') course can communicate with each other and thus transmit knowledge and information about a particular area.

Figure 1. MOOC definition.

Historically, the first MOOC was activated in 2008 by G. Siemens and S. Downes and named it "connectivism and Connective Knowledge"—better known under the name CCK08 [5]. The two trainers held classes for 25 students in Manitoba University and opened an online course, which was attended by 2200 participants. The theme of the course, which from its name can be concluded, was to connect people and their general and specialized knowledge through their collaboration on the web. The exchange of information took place via blogs and through organized discussions on Moodle and Second Life platform. The very flow of information on the web could be traced via RSS (Rich Site Summary) queries.

After the appearance of the first MOOCs, rapid development of courses followed that had common characteristic in the beginning and were free, which caused a lot of interest in this kind of platform of DL (**Figure 1**).

5. cMOOC

Nonprofit MOOCs, based on the free exchange of knowledge and active participation of all stakeholders in the development of knowledge in certain areas, are also known as cMOOC (where c before the word refers to the term MOOC connectivism or merger or cooperation). Their main characteristics are that the exchange rate can be initiated by any person, and there is no one moderator or speaker but all active participants in the exchange of information in certain areas and thus increase and deepen their knowledge [9, 11]. It should be noted that there are an unlimited number of players in the MOOC (when in each course the number of participants was greater than 100,000) and also all forms of literature and materials in the course are free to use. It can be concluded that due to the availability of material on the web and the huge number of very complex information to filter all the data, a large number of participants take advantage of such a platform. Also, here you can come to the conclusion that the group of MOOC participants in a single moment can focus their interests to some other field and “give birth” to another MOOC and MOOC is a topic that builds on this knowledge. Also, because of the free mutual communication of students within, the MOOC recognizes users with the same interests, similar problems, and even after that the MOOC continues to communicate with each other and thus continues to work on the development of knowledge in a MOOC and can start a new MOOC [2, 9].

6. xMOOC

Since 2012, the first MOOC course that was not free appeared. In now days we can see that the providers of courses are universities and prestigious companies instead of nonprofit groups and individuals. The characteristics of these MOOCs are different from classical cMOOC platform. First of all, these MOOCs are based on the classic platforms and methods of knowledge transfer in DL. Usually there is one or a group of moderators. Managers and trainers in this case have far greater control over the realization of MOOC and execution of tasks within it. Participants have a relatively small part in the creation of materials for the further develop-

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ment of knowledge. The number of students is unlimited, but the access to the material of the course is limited to only those who have registered as participants. If the student wants a certificate of completion of the course, he must pay for it and it is often not a small sum. This MOOC is also called xMOOC. A large number of prestigious universities have developed this platform for their courses [3, 12, 16, 18]. Partly this was done due to the expansion of knowledge and partly to create interest in potential students for these universities. Also in this case, a MOOC meet and communication with people from different backgrounds and with different interpretations of the problem may lead to the transfer and development of knowledge in a wide variety of environment.

This course does not belong to the formal aspect of education, regardless of what they have been usually created for by different educational institutions or firms with access to specialized training, and as such can be classified as a nonformal form of education. Even if the majority of students do not qualify for a certificate, participant's level of knowledge definitely grows at the end of completing the course.

The positive direction of development of such informal courses, first of all, is to inform and educate people in the ways of exercising their rights. Also, some of the countries aim in this way to improve the qualification of the working population, for example, in India, where there are a large number of people who are computer illiterate. In India, the courses are organized by the state and sponsored by strong companies in order to improve this condition [17].

7. Expansion of MOOC and providers of this platform

The year 2012 can be regarded as the most significant for the development of MOOC platforms. During this year, a group of powerful financiers, in cooperation with known universities, has placed several well-known platforms for MOOC: before all, that refers to a platform *Coursera* by qualified institutions such as the University of Maryland, Wharton School, University of Virginia, Stanford University, University of Houston System, University of Tokyo, and University of Edinburgh [18], and then to the platform *Udacity*, which has been created by Georgia Institute of Technology, San Jose State University, Google, Salesforce.com, Facebook, Cloudera, NVidia, Autodesk, and Cadence, and *edX* platform backed by MIT, Harvard University, UC Berkeley, Kyoto University, Australian National University, University of Queensland, IIT Bombay, Dartmouth College, and Universidad Autonoma de Madrid [16]. These three platforms are the best known and most developed, because large financial institutions are financing them. These platforms organize a large number of courses in different fields. Let us just say that Coursera MOOC organizes more than 1000 courses in cooperation with about 120 partners.

MOOCs organized by these platforms are attended by more than 14 million participants.

Even though these platforms are financed by major financiers, it should be noted that the platform edX is not profitable and it has maintained the principle of free access to all the materials and all the participants.

Provider	Course type	Organizations	Country	Year of establishment
XuetangX	Nonprofitable	Tsinghua University	China	2014
WizIQ	Commercial	IIT Delhi, Des Moines Area Community College	India/USA	2007
Université Numérique France Université Numérique	Nonprofitable	Institut Mines-Télécom, Conservatoire National des Arts et Métiers, École normale supérieure de Cachan, University of Paris-Sud	France	2013
Udemy	Commercial	Professors from Universidad de Chile, University of Chicago Law School, George Washington University, and other institutions.	USA	2010
Udacity	Commercial	Georgia Institute of Technology, San Jose State University, Google, Salesforce.com, Facebook, Cloudera, Nvidia, Autodesk, Cadence	USA	2012
Stanford Online	Nonprofitable	Stanford University	USA	2006
Peer to Peer University	Nonprofitable	nije navedeno	USA	2009
OpenLearning	Commercial	University of New South Wales, Taylor's University, University of Canberra	Australia	2012
openHPI		launched in September 2012 by the Hasso Plattner Institute at the University of Potsdam, Germany	Germany	2012
Open2Study	Commercial	James Cook University, Griffith University, University of Wollongong, Flinders University, RMIT University, Central Institute of Technology, Sydney Institute, University of Western Sydney, Polytechnic West, Macquarie Graduate School of Management, Swinburne University of Technology, University of Newcastle, Jordan University of Science and Technology, University of Tasmania, International College of Management, Sydney, e3Learning, Enterprise Architects, Massey University, Macquarie University, Gowrie Victoria, South China University of Technology, TAFE SA, Curtin University	Australia``	2013
One month	Commercial	School of Visual Arts	USA	2013
NPTEL	Nonprofitable	Indian Institutes of Technology, Indian Institute of Science	India	2006
NovoEd	Commercial	Stanford University, Wharton, Princeton, Darden, Comcast, Carnegie Foundation, Universidad Católica de Chile	USA	2013
MOOEC	Nonprofitable	University of Queensland, Griffith University, Queensland University of Technology	Australia	2013

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Provider	Course type	Organizations	Country	Year of establishment
Master University	Commercial	Launched in January 2015 by the Miramondo Network s.r.l.	Italy	2015
Khan Academy	Nonprofitable	nije navedeno	USA	2006
University	Commercial	Universidad Autonoma de Madrid, University of Florence, University of Hamburg	EU	2013
FutureLearn	Commercial	University of Birmingham, University of Edinburgh, University of Reading, Open University, Monash University, Trinity College Dublin, Warwick University, University of Bath, University of Southampton	UK	2012
Eliademy based on the Open Source MoodleVirtual learning environment.	Commercial	Aalto University Executive Education The site is localized to more than 19 languages (including Latin), designed for mobile use.	Finland	2012
edX	Nonprofitable	MIT, Harvard University, UC Berkeley, Kyoto University, Australian National University, University of Queensland, IIT Bombay, IIM Bangalore, Dartmouth College, Universidad Autonoma de Madrid	USA	2012
Coursera	Commercial	University of Maryland, Wharton School, University of Virginia, Stanford University, University of Houston System, University of Tokyo, University of Edinburgh	USA	2012
Canvas Network	Commercial	Santa Clara University, University of Utah, Université Lille 1	USA	2008
Academic Earth	Nonprofitable	UC Berkeley, UCLA, University of Michigan, Oxford University	USA	2009

Table 1. MOOC providers.

One of the most famous nonprofit financial donors to these organizations is Bill Gates.

There are other MOOC platforms, but they do not have such a large number of courses and participants [15]. Although, there are platforms developed in local conditions aimed at increasing competence and general literacy of their population.

The principle of freedom of access to MOOC in each case leads to a multinational and multicultural development of communication and knowledge transfer, so that this kind of platform has a benefit to all participants, and perhaps especially to those whose communities' topics related by MOOCs are not developed enough. Fact is also that the individual courses are listened by thousands of listeners from dozens of countries.

Data show that about 45% of the participants follow the courses in nonmaternal language, which supports the claim on the internationalization of this type of education.

Monitored data show that about 45% of the participants follow the courses in non-maternal language, which supports the claim on the internationalization of this type of education [14].

Depending on the wishes and needs, each student can easily find a platform and MOOC that he can attend.

Table 1 presents the providers of courses and institutions that participate in them, including profitability rate and the year when the provider was established.

8. MOOC participants

Who are in fact the participants of such courses, what is their motivation, how do they attend a course, how many of them give up, and how many of them complete a course? These are the key questions that have to be answered; also is the MOOC platform the future of the education or is it just one of the experiments, transient phase in the creation of future platforms for DL?

To be a participant of this course someone, first of all, must be computer literate at some level. Because except work on the computer, participant must be fully aware of the Internet, as well as some of the IT tools which are used during the MOOC, primarily in communication.

This means that participants of such courses are usually high school students and graduates. Also, if it is a specialized theme, a large number of participants may be masters and doctoral students, as well as PhDs in certain fields.

In addition to computer literacy, there is a need for knowledge of the languages of the developed world, as MOOC by definition does not develop as a local platform. Organizers usually choose the most common language and it is usually English. Normally, if it is a locally developed MOOC platform it is organized using the local language.

9. The motivation for attending these courses is different

As can be seen from **Figure 2**, a good portion of students are choosing the course where they expect the exchange rate to be more interesting than courses that they have already seen.

Second, course participants elected the reasons to improve their knowledge in the current and previous education. Their desire is to upgrade their skills. They are based on the level at which the course is held and depending on the information obtained they do not have a priority to complete the course [3, 8].

Part of the participants considered that the MOOC will create benefit in their professional work. These students have the imperative of completing the course and acquiring certificates for better positioning in the professional environment.

A number of users choose the course according to the organizers; they expect to learn more from lecturers from prestigious institutions in the field of education [14].

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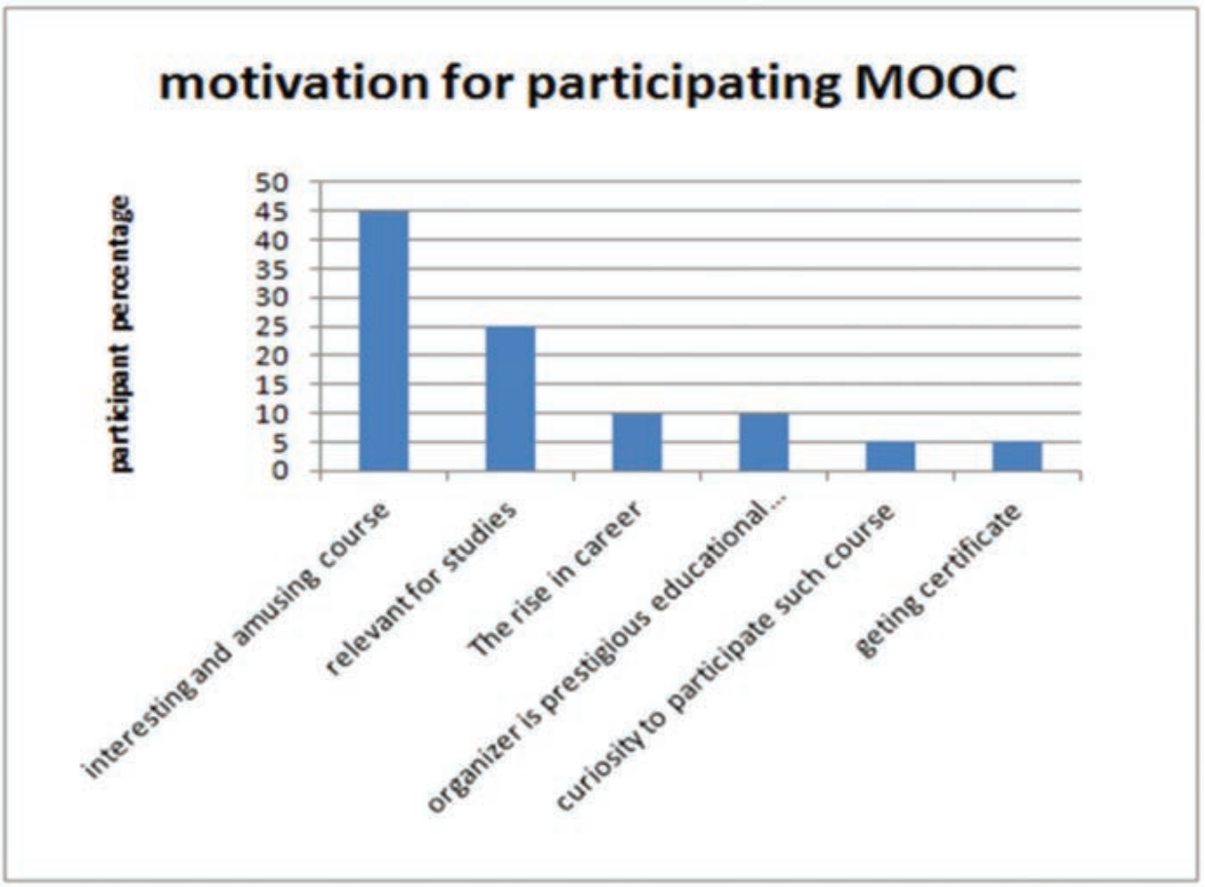

Figure 2. Motivation for participating MOOC.

While some of the participants got enrolled out of curiosity, they implicate that they want to gain as much information as possible from the course. These attendants are usually people who normally browse the web and often do not finish the course. In some moment, they satisfy their needs for specific information and after that they leave the course.

In fact, there is not an accurate cross-section of states when a certain part of the student stops to listen and attend a course. This is reflected primarily in the fact that a score of 6–10% of participants who have completed a course is considered very good, even excellent results.

Attention must be on the fact that so far the largest number of participants in these courses is from America (49%), followed by Europe (31%), then in South America, Asia, and Africa (**Figure 3**).

This data indicates that people from developed areas often choose additional education primarily to better their basic education, and develop their knowledge of technology. In this case, MOOC is an excellent tool for nonformal and informal education, primarily because it is free.

As far as gender is concerned, more females participate in these courses than males.

Most participants of MOOCs had previous experience with DL systems. This indicates that DL systems have a positive impact on the development of the desire for further education through the web.

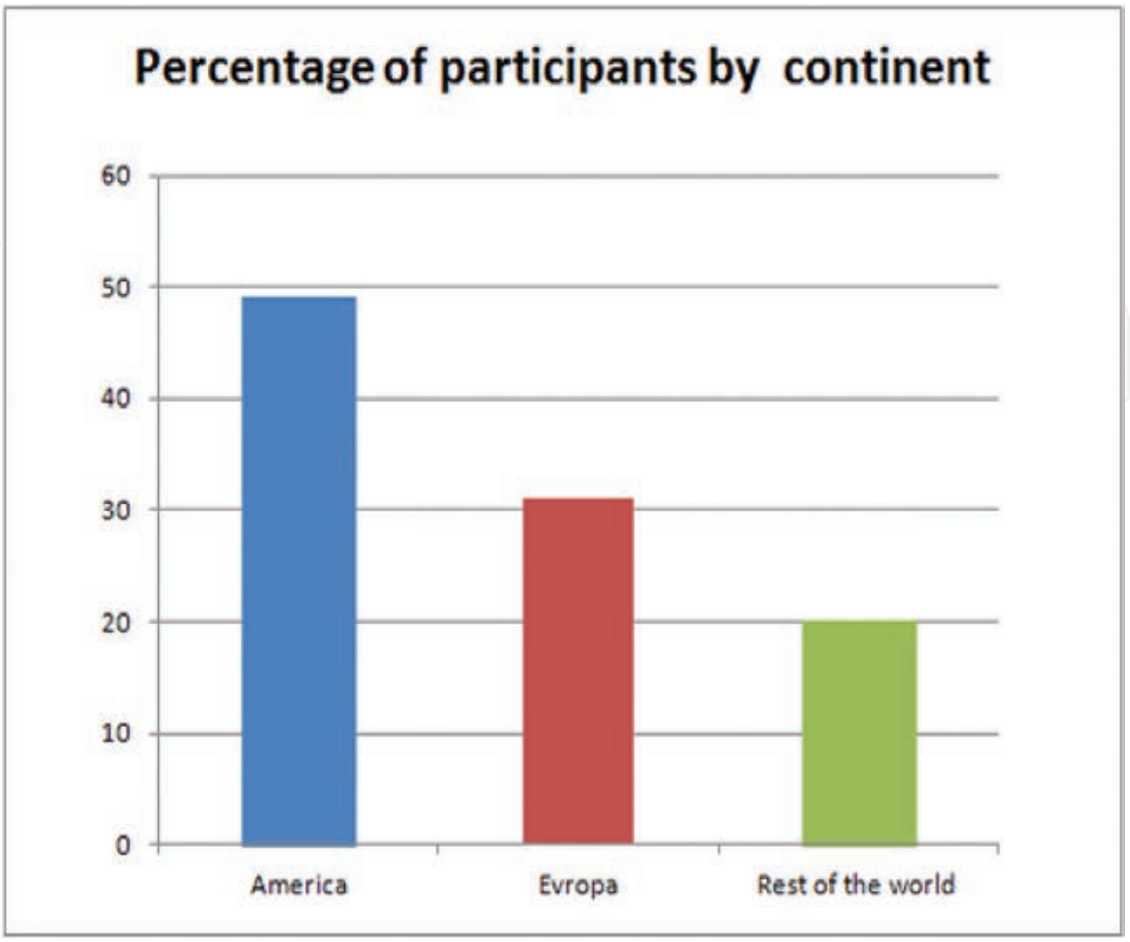

Figure 3. Percentage of participants by continent.

10. Why MOOC has an important role in education?

First of all, it is because a large number of participants in MOOC acquire at least basic information about their topic of interest from these courses. Also, students who have previous experience in these fields meet their needs for additional information. Participants do not need to have any kind of certificate or diploma of previously acquired knowledge [2, 3].

However, the biggest shift is that the students are the future students to the DL systems, and get used to the way of working of their future colleges and universities.

The large number of participants, for whom these are not core areas, acquires knowledge that does not have to be certified. They get knowledge that can further increase their level of skills and functionality of the primary areas. In essence, this mix of different skills in various fields is the basic contribution to the development of general knowledge.

One of the advantages of MOOC is that it can be organized by anyone who wishes to exchange and upgrade knowledge in specific areas. The important thing is how fast organizer can gather students and inform them when the course begins [4].

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It is also important that MOOC can be arranged regardless of the time zone and physical limitations. There are no limits with the MOOC. You can and it is desirable to use all the social networking and communication tools that are the most developed in the region where you target the largest number of participants [6].

Contextual content can be shared by all participants of the course.

It is good that knowledge is gained in a less formal setting, so that all the participants can be much less limited in the communication.

Coincidentally, participants can reach new findings thanks to the exchange of unknown information in order to solve given problems.

It is equally important that in this way a participant of MOOC increases his skills in lifelong learning and increase his opportunities for greater absorption of knowledge.

One of the biggest advantages of MOOC is that its activities do not have to stop after the completion of the course. Since the MOOC is based essentially on the "peer to peer" network, a number of participants continue to be in a relationship and create its own network for the exchange of knowledge in the field where MOOC was organized.

11. MOOC organization

As we have repeatedly said, MOOC can be organized by any individual or group of people in order to share and develop their knowledge of the environment [4, 6, 7].

However, we should be very careful with the choice, first of all, course topics. It is possible that the course, especially cMOOC went in another direction, because the original theme loses significance.

Very important, if not crucial, thing in defining and organizing the course is the choice of tools—software applications, which will be used by the course participants. Organizer should aspire to, as a base platform for the exchange of data, use the most commonly used applications in an environment where the course is held. It is also preferred that the course is supported by multiple communications platforms. We think that the course should not be maintained only through the web, but also through mobile network, such as android or any other supported operating system and software.

If possible, we can use as a platform DL systems that are used in our environment.

12. MOOC and VSSS Belgrade Polytechnic

VSSS Belgrade Polytechnic (BP) has been trying in recent years to establish and accredit DL system. In one part, it was very successful, but it also had significant problems in implementation.

The first attempt of implementing DL was the use of the Moodle platform. Several subject teachers dared to put their teaching duties through this platform and to monitor the

results of implementation. At the beginning, students showed interest in this form of learning and achieved results very similar to those that have received classical education. However, the absence of "moderators" and the real practice presented a problem with this form of education. The platform has proved to be an excellent means for information exchange, lectures, conducting quizzes, and record the assumed material and activity of students.

To further develop the technology and software, as well as monitor information from the environment (informal education), we came up with the idea to create a platform for teaching in the form of a MOOC.

It is designed in the following approach:

- Communication takes place via e-mails and hangouts application on Google service. BP uses Google Education system for some time.
- Exchange of written and video materials is carried out through Google Drive. Also, for the organization of teaching and exchange of materials, Google Classroom is used.
- Video tutorials and online consultations are done via software BigBlueButton. Lectures are performed repeatedly in small groups and can be downloaded and saved via Google Drive.
- For testing we use MOODLE or QuizFaber software.

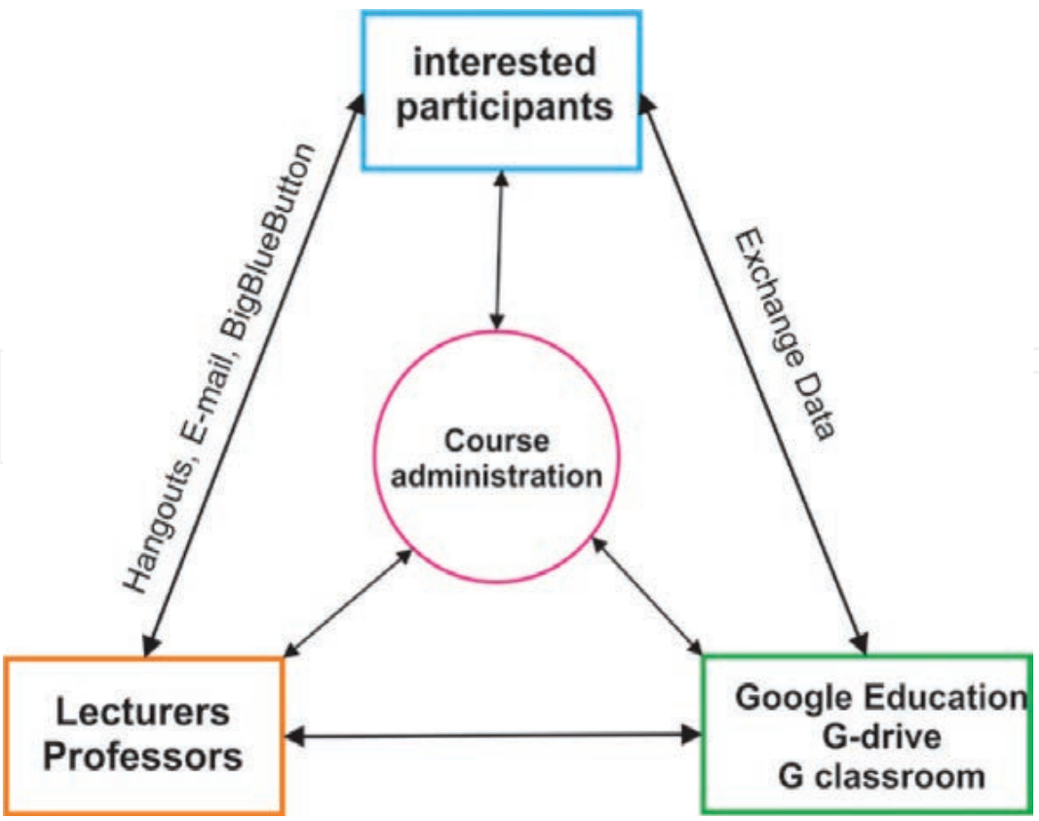

Figure 4. Basic scheme of communication on course.

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All students have the opportunity to sign up to follow the course subject. In the future BP will also enable that all interested parties outside BP can follow the course if they want to. All materials are and will be available to students, and they can exchange opinions on students' blog. If they have uncertainties they can schedule an online consultation with the lecturer or assistant.

The basic scheme of communication is illustrated in **Figure 4**.

Problems that occur are primarily of technical and financial nature. Better applications are relatively expensive and the biggest problem is the upload of video streaming, because the speed of the ADSL connection is relatively small and often vary, so there is plenty of downtime. Because of this, the groups are often very small, only five students, which is not adequate for the number of people interested in the lessons of course.

13. MOOC and Faculty of Mechanical Engineering, University of Belgrade

Faculty of Mechanical Engineering, University of Belgrade, accredited the course for International Welding Engineers (IWE) according to the program and rules of the International Institute of Welding (IIW) and according to the document IIW Guideline IAB-252r3-16 [1]. A candidate completing the IWE training under this program is expected to acquire advanced knowledge and critical understanding of welding technology application, which demonstrate the following: technology mastery and required innovation, being able to solve high-level complex and unpredictable problems, the ability to manage high-level complex technical and professional activities or projects related to welding applications, and taking responsibility for decision making in unpredictable work or study context [19].

The course consists of 448 hours, of which 388 hours refers to theoretical training and 60 hours is intended for practical training. The modular course content is given in **Table 2**, in the following structure.

Total number of hours is divided into three parts: Part 1, Part 2, and Part 3. Part 1 includes main topics and basis of "welding processes and equipment" (46 hours), "materials and weld ability" (33 hours), and the computation of forces and tensions and the presentation of weld (14 hours). Fundamental knowledge of those sections is the basis for the attendance of Parts 2 and 3 of the course. Part 2 is practice and laboratory, while Part 3 refers to welding processes, behavior of metals subjected to welding, design of welded joints, fabrication, and applied engineering.

Participants must have a primary degree in an engineering discipline or its equivalent recognized by the national government and assessed by the ANB. Therefore, it is expected that participants have at least a Bachelor degree at university level with a minimum study of 3 years.

The Standard Route of this course is given in **Figure 5**, and this is the route recommended by IAB (International Authorization Board) as offering the fastest, most comprehensive manner in which the syllabus may be covered. The Standard Route also allows a limited amount of

Modules of theoretical education and fundamental practical skills	Number of hours
1. Welding processes and equipment	95
2. Materials and their behavior during welding	115
3. Construction and design	62
4. Fabrication, applications engineering	116
Sub-total	**388**
Fundamental practical skills	**60**
Total	**448**

Table 2. Structure of IWE course content.

prior learning (Part 1 of each qualification course) to be taken into account, for example during university or college courses.

The course is very demanding, expensive, and time-consuming. Bearing in mind that the majority of participants are employed full-time, one of the main problems, in addition to the price, is absenteeism.

Since 2001, there is possibility to take the Part 1 of the IWE as a distance learning course. Students have the chance to choose their individual time to learn. For companies, the use of a training program for the evenings or at the weekend means less loss of working hours and saves cost. Further, there are no travel expenses, cost for journeys, or stays overnight as well as other expenses. An important advantage is that in case the participants already have certain knowledge concerning the single lesson they may be learned in shorter time or even can be skipped.

Bearing all this in mind, we came up with the idea to create a MOOC platform for attending the Part 1 of the IWE, which would be free. Namely, the IIW rules allow the so-called alternative route of the course. According to that route, students have direct access to Part 2 and that is primarily intended for those students who during their formal education at masters studies passed the corresponding exams.

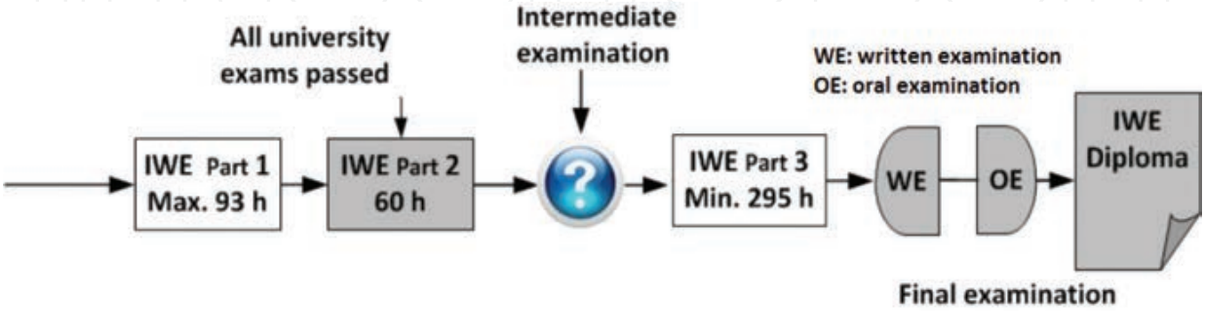

Figure 5. Standard route for IWE [1].

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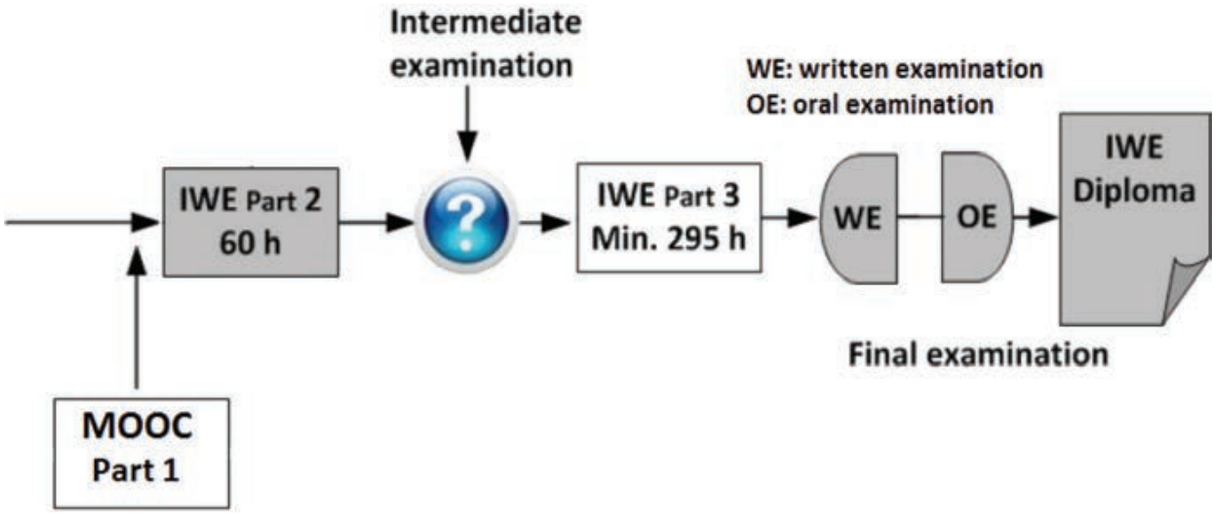

Figure 6. Alternative route with MOOC for Part 1.

In Serbia welding subjects exit only at the Faculty of Mechanical Engineering in Belgrade, this option is limited to a very small number of participants. Furthermore, it was observed that students from other faculties have difficulties in certain areas of the course, mostly covered with Part 1, because they do not have enough background knowledge, and additional mentoring is necessary. We believe that MOOC platform would be ideal for such work. Schematic representation of an alternative route for IWE course with implemented MOOC platform is shown in **Figure 6**. Students who have successfully passed the intermediate examination (Part 1) of the course are allowed to attend Part 2 and Part 3 of the course.

The main advantages of MOOC course for Part 1 are:

- Shortening the duration of a standard course.
- More participants for attending standard course.
- Raising the level of prior knowledge of participants.
- Individual tutorials with the students.
- Massification of the course.

The program can even be used without specific PC knowledge. It does not take long preceding times to become familiar with the subject. Hardware/software system requirements are:

- Windows NT/95/98/2000/ME/XP/Vista/Windows 7.
- Screen resolution 1024× 768 pixel.
- 10 bit depth of color.
- CD-ROM Drive.

Part 1 consists of 93 teaching hours, divided into 23 lessons. For each lesson is given a number of hours, which indicates the depth to which a topic is dealt with. This will be reflected in the scope and depth of the examination. Each lesson is supported by text, sound, images, video films, and interactive animations. By using the media mentioned the contents are given close to practice with the effect that the motivation to learn remains high.

Participants will receive a detailed schedule of lectures with dates. Since continuously learning is very important in this type of course, due to the large volume of material, it is planned that the lessons will not be placed all at once, but according to a specified schedule.

Lectures for a total of 24 teaching hours will be posted on Monday and the candidates will be able to download them. On Friday, candidates get homework and knowledge test and have deadline until Sunday to do and return it. Online consultation via Skype will be on Wednesdays, Thursdays, and Saturdays from 18 to 20 hours, since it is assumed that the majority of participants are employed. On next Monday, the previous lessons are removed from the site and the following are uploaded. If a candidate did not do his homework, he will not have access to new lessons and thus there is no possibility of further follow-up classes. Thus, it is envisaged that, within 4 weeks, all the lessons planned by the program will be realized. After the completion of the last homework, in the fifth week, the online exercise is planned, candidates get a general catalog of questions to help them to prepare for the examination with daily consultations.

We believe that, after all, the candidates will be ready for the intermediate examination, which will be held at the Faculty of Mechanical Engineering, and that also will be for free, since it is a condition for the main course. After passing the exam, candidates are included in the standard route of the course, or to follow Part 2 and Part 3. According to the rules of the guideline, the complete IWE/IWT course has to be finished within 3 years.

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